System and Method For Implementing Source Based and Egress Based
Virtual Networks in an Interconnection Network

ABSTRACT OF THE DISCLOSURE

An interconnection network, particularly a Gamma graph network, comprising a
5   number of interconnected routers implementing source based and egress based virtual
networks in order to prevent tree saturation and deadlock while routing packets. The
interconnection network can be used as a fabric within a multi-application switch router,
for example. Packets traverse the fabric from any packet source to any packet
destination by traversing a source based virtual network associated with a packet source
10   and then by traversing an egress based virtual network associated with a packet
destination. By partitioning the fabric into source based virtual networks and egress
based virtual networks, the number of control structures required to manage them are
reduced as compared with destination based virtual network architectures. Furthermore,
by dynamically assigning buffer resources to a virtual network when needed provides
15   more efficient utilization of buffer resources as opposed to dedicated assignment of
buffer resources to each virtual network.